

**REMARKS**

This response amends the specification and drawings to overcome the formal objections and amends claim 1 to incorporate features disclosed in claims 4-6 and an additional feature described at page 8, line 12. Part of the limitations of claim 18 and an additional feature described at page 8 line 12 have been added to claim 17. Claims 4-6 are canceled to avoid duplicity. The features of claim 18 added to claim 17 have been removed to avoid duplicity. Claims 7-10 originally depending on claim 6 have been amended to depend on claim 1. The step of forming barrier ribs in claim 22 have been disclosed in more detail, in which "a plurality of first, second and third barrier ribs" replaces the "plural barrier ribs". Support for those features can be found, e.g., at pages 7-8 of the specification.

In section 1 of the Office Action, the Examiner objects to the drawings, indicating that reference numbers "5", "6a", "11a", "11b", and "11" are included in the drawings but not disclosed in the specification. Relevant paragraphs of the specification have been amended to add numbers "5", "6a", "11a", and "11b". Since the reference number "11" in Fig. 5a can be seen in page 7 line 11 and page 9 line 12, it is believed that the Examiner is mistaken regarding reference number "11".

In section 2 of the Office Action, the Examiner objects to the drawings, indicating that the reference number "100" is mentioned in the description but not referenced in the figures. In amended Figure 2, the previously omitted reference number 100 has been added. The Applicants believe that

objections to the drawings have been overcome.

In section 4 of the Office Action, the Examiner objects to the specification, indicating that on page 8, line 4, "13" should be --15--. The specification has been amended accordingly.

Rejections under 35 USC 102 and 35 USC 103

In sections 5-6, claims 1-5, 11, 12, 15 and 17 are rejected under 35 USC 102(a)/102(b) as being anticipated by the acknowledged prior art (hereinafter "APA") of Figs. 1G and 1H. Moreover, in section 7, claim 22 is rejected under 35 USC 102(b) as being anticipated by Loh et al. (US Patent No. 5,650,919). In sections 8-9, claims 6-10, 13, 14, 16 and 18-21 are rejected under 35 USC 103(a) as being unpatentable over APA in view of Loh et al. The claims have been amended and the Applicants believe that all pending claims are patentable over the cited references.

APA and Loh et al., standing alone or in combination, does not disclose, teach, or suggest, *inter alia*, the following features of the claimed invention:

Claim 1: "wherein the barrier structure comprises a plurality of first barrier ribs extending along a first direction to form a partition between the bumps corresponding to the first pads, a plurality of second barrier ribs extending along the first direction to form a partition between the bumps corresponding to the second pads and a plurality of third barrier ribs extending along a second direction to form a partition between the bumps corresponding to the first and the second pads".

Claim 17: "wherein the barrier rib comprises a plurality of first barrier ribs extending along a first direction to separate the conductive particles between the first pads, a plurality of second barrier ribs extending along the first direction to separate the conductive particles between the second pads and a plurality of third barrier ribs extending along a second direction, separating the conductive particles between the first and the second pads."

Claim 22: "forming plural bumps on the protective layer in accordance with the electrodes, and conducting the electrodes and the bumps"; and

"forming a plurality of first, second and third barrier ribs on the side of the circuit device, thereby separating the bumps"

APA as illustrated in Figs. 1G and 1H (described at page 3 of the specification) is identified as US Patent No. 5,650,919. In other words, APA as illustrated in Figs. 1G and 1H and Loh et al. are the same reference (hereinafter referred to as "Loh et al.").

Loh et al. discloses a peak-shaped dielectric dam formed on a second member between the two electrical connections. As described at page 3 of the specification and illustrated in Fig. 1H, Loh et al.'s structure cannot prevent the conductive particles 1 from shifting along the routes as indicated by the arrows, which can cause high impedance and short-circuiting. Moreover, if a misalignment occurs, or a mounted chip is defective, a reworking process is required to remove the chip from the substrate. The rework may damage the barrier structures, such as the dielectric dam.

Comparing Loh et al.'s figures (such as Fig. 7b and Fig. 9, and Figs. 1G-1H of the present application) with Fig. 2 of the present application, it is clear that Loh et al.'s structure does not have "a plurality of first barrier ribs extending along a first direction to form a partition between the bumps corresponding to the first pads, a plurality of second barrier ribs extending along the first direction to form a partition between the bumps corresponding to the second pads and a plurality of third barrier ribs extending along a second direction to form a partition between the bumps corresponding to the first and the second pads", as recited by claims 1 and 17 of the present application. Instead, Loh et al. **only teaches one set of barrier ribs** (the peak-shaped dam 42).

In section 9 of the Office Action, the Examiner asserts that "the acknowledged prior art of Figs. 1G and 1H disclose the claimed invention except for a third barrier rib... However, Loh et al. teaches in Fig. 7b and Fig. 9 the barrier rib 42 being further comprised of a third barrier rib (at the top part of 42 which is connecting the three 42s) extending along a second direction, forming a partition between bumps 22 corresponding to first (any group of 22) and second pads (any group of 22)." These comments from the Examiner are not understood. In Figs. 7b and 9 of Loh et al., only two peak-shaped dams 42 are shown. So what is the top part of 42 which is connecting the three 42s? Loh et al. only has one set of peak-shaped dams which extend along the same direction. So where are the first barrier ribs extending along **a first direction** and the third barrier ribs extending along **a second direction?**

Moreover, claim 1 recites that the “first barrier ribs … form a partition between the bumps corresponding to the **first pads**”, that the “second barrier ribs … form a partition between the bumps corresponding to the **second pads**”, that the “third barrier ribs … form a partition between the bumps corresponding to the **first and the second pads**”. As specified in claim 3, “the first pads are input terminals of the LCD monitor, and the second pads are output terminals of the LCD monitor”. Loh et al. clearly does not disclose those features.

Due to the reasons stated above, the Applicants believe that claims 1, 17 and 22 are patentable over Loh et al., because Loh et al. does not disclose “a plurality of first, second and third barrier ribs”. Due to these different types of barrier ribs, the claimed invention overcomes the problems of Loh et al. as described at page 3 of the specification. Claims 2-3, 7-16, and 18-21 are also patentable, at least by virtue of their dependency from claim 1 or claim 17. Moreover, these claims are patentable by virtue of the additional limitations recited therein.

For example, claim 7 recites “wherein the first and the third barrier ribs are connected, forming a plurality of L-shaped structures.” Claim 8 recites “wherein the first and the third barrier ribs are connected, forming a plurality of separated T-shaped structures.” Those features are clearly not disclosed in Loh et al.

At page 7 of the Office Action, the Examiner asserts that “regarding claim 7, Loh et al. discloses in Fig. 9 the first and the third barrier ribs being connected, forming an L-shaped structure (at the point view of right side of

42 and the top of 42)" and that "regarding claim 8, Loh et al. discloses in Fig. 9 the first and the third barrier ribs being connected, forming an T-shaped structure (at the point view of middle side of 42 and the top of 42)". These comments are not understood.

Loh's barriers are peak-shaped dams. The Applicants cannot understand how such dams can be viewed as "L-shaped structure" or "T-shaped structure".

New claim 23 recites "wherein the first barrier ribs are perpendicular to the third barrier ribs". New claim 24 recites "wherein the first barrier ribs are parallel to the second barrier ribs". Support for these features can be found, e.g., at Fig. 2 of the disclosure. The Applicants believe that Loh et al. clearly does not disclose these features.

The Applicants respectfully submit that all pending claims are patentable and reconsideration of this application is respectfully requested.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account No. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

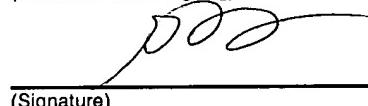
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I hereby certify that this correspondence is being deposited with the United States Post Office with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on October 16, 2003

(Date of Deposit)

Troy Guangyu Cai  
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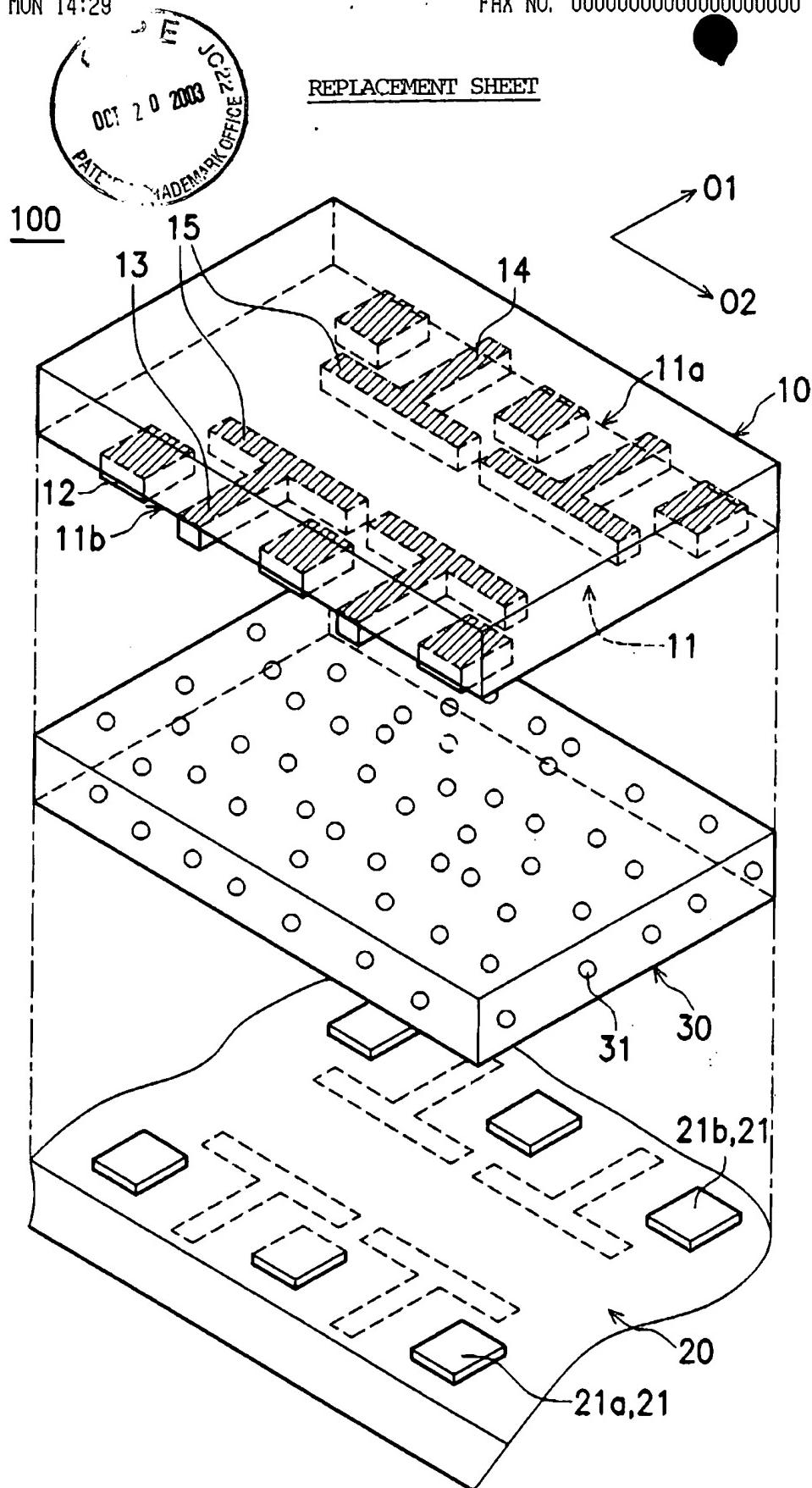
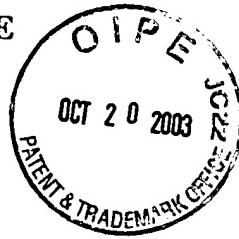


FIG. 2

**BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE  
UNITED STATE PATENT AND TRADEMARK OFFICE**



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